



***Financial Analysis Report on Transdigm Group Inc.***

Nan Li

CIPA Class 2017

8/6/2017

# **Professional Report**

## ***Financial Analysis Report on Transdigm Group Inc.***

### **Index**

#### **I. Introduction**

##### **1.1 Business Description**

#### **II. Business Segments**

##### **2.1 Power and Control Segment**

##### **2.2 Airframe Segment**

##### **2.3 Non-Aviation Segment**

#### **III. Investment Thesis**

##### **3.1 Thesis Point 1**

##### **3.2 Thesis Point 2**

##### **3.3 Thesis Point 3**

#### **IV. Management Team**

#### **V. Valuation**

#### **VI. Appendix**

## I. Introduction

This is an investment analysis report on TransDigm Group Incorporated (TDG), which is a manufacturing company that designs, produces and distributes aircraft components in the United States. We are writing this report to clarify why TDG stock is worth investing in the public market. TDG has compounded its return in the past three years, and we believe it should continue to generate meaningful returns. We recommend to buy TDG stocks based upon three key reasons: (1) TDG's moat should drive future organic EBITDA growth; (2) TDG's track record of making intelligent acquisitions should drive inorganic returns; and (3) TDG's capital allocation policies should magnify returns even further. In this report, we'll introduce its business segments, explain the above mentioned three investment thesis, dig into its management team and conduct valuation analysis.

TDG operates through three segments: Power & Control, Airframe and Non-aviation. The Power & Control segment produces power or power control components for aircrafts, like electronic, fluid, power and motion control products. The Airframe segment provides non-power airframe products and cabin structure technologies. The Non-aviation segment provides seat belts and safety restraints for ground transportation and electro-mechanical actuators for space applications. The primary clients include commercial airline operators, third party maintenance suppliers, military buying agencies, and repair depots. TransDigm Group Incorporated was founded in 1993 and is based in Cleveland, Ohio<sup>1</sup>.

### **1.1 Business Description**

Most analysts frame Transdigm by its end-market exposure in two key segments: OEM and Aftermarket.

Like many aerospace businesses, TDG sells OEM parts to Boeing or Airbus at a fairly low margin, but makes extremely high margins on the steady stream of aftermarket or "spare" parts. OEMs typically manufacture a plane for a cycle of 25 – 30 years, and then planes fly for 25 – 30 years, leading to a total selling window of 50 – 60 years for TDG components.

The OEM end-market segment delivers mission critical parts to key airline manufacturers (think Boeing, Airbus, but also some military contracts as well). This is a bit of a cyclical business but still high margin. The cyclical nature actually comes from incremental orders, e.g. the airline cycle / new plane orders. Pre-existing contracts are very long-term in nature (think 15 to 20 years or more), allowing some measure of underlying stability.

More interesting is the Aftermarket end-market. The Aftermarket distributes mission critical parts to planes that need parts as part of an ordinary maintenance. FAA regulations actually prohibit planes from taking off if they don't possess these 'mission critical' parts<sup>2</sup>. Because 90%+ of TDG's products are

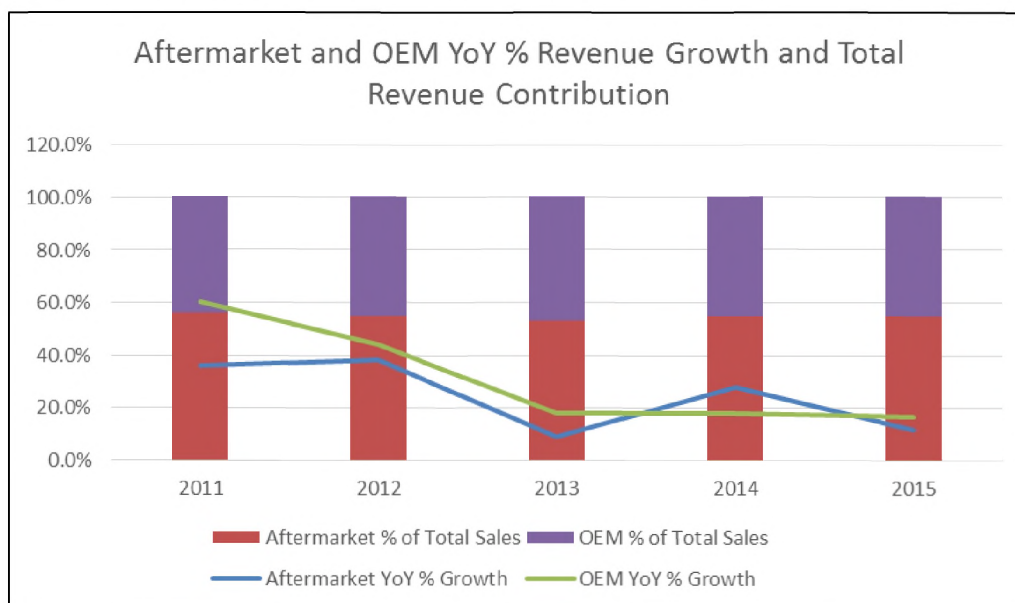
---

<sup>1</sup> "Transdigm Group Inc. Profile," Reuters, accessed August 6, 2017, <http://in.reuters.com/finance/stocks/companyProfile?symbol=TDG.N>.

<sup>2</sup> "A Comparison of DOD and Commercial Airline Purchasing Practices," United States General Accounting Office, accessed November 1999, <http://www.gao.gov/assets/230/228420.pdf>.

proprietary and they are the sole provider of 80%+ of their products, this is an incredibly stable business. We believe the Aftermarket end-channel is the 'source' of TDG's high margins.

The mix and growth rate of both the Aftermarket and OEM<sup>3</sup> end market channels are shown below –



Yet the OEM and Aftermarket are not two separate businesses, they are linked: in order to access the Aftermarket, one must make big up front investments and defer returns through the long OEM phase. This reinforces the stickiness of TDG's 'mission critical parts.

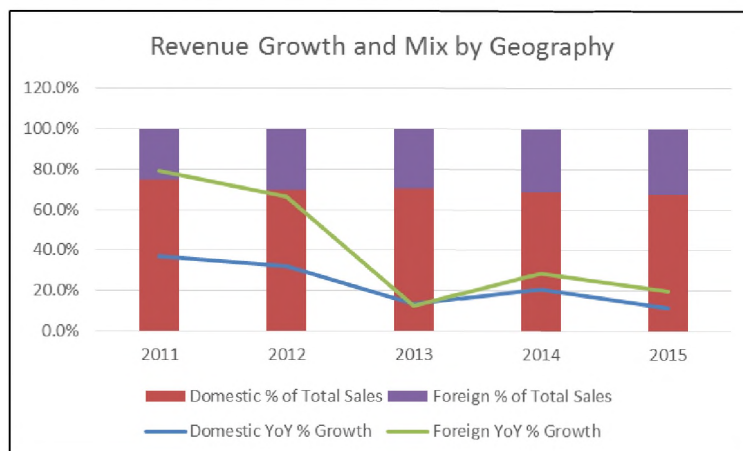
What are these mission critical parts? They range from batteries to seatbelts. In fact, if you ever noticed on the seatbelt logo when you flew on a plane, they are made by the same TDG owned firm: AmSafe. Some of these mission critical parts are shown<sup>4</sup> below –



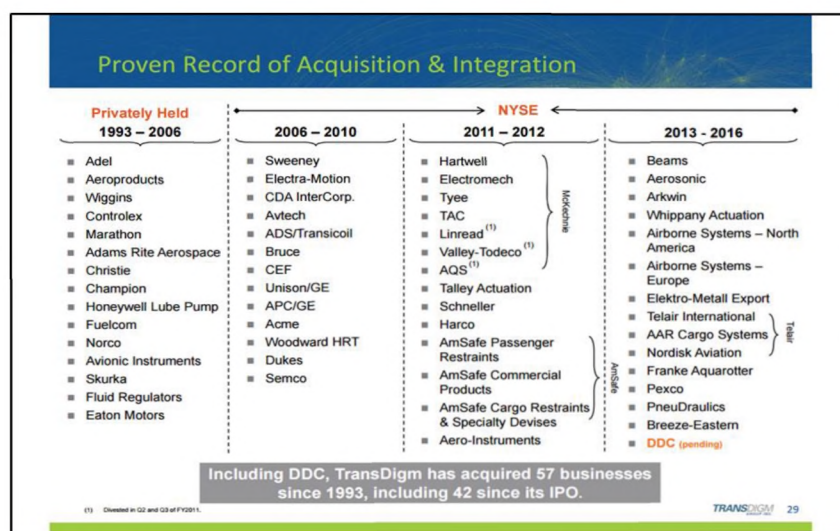
<sup>3</sup> Commercial OEM is ~ 70% while the remaining 30% is Defense OEM.

<sup>4</sup> "2016 Analyst Day Presentation," Transdigm Group Inc., <http://www.transdigm.com/phoenix.zhtml?c=196053&p=irol-presentations>.

Transdigm sells these mission critical parts not just in the U.S.<sup>5</sup> but globally. And foreign sales have approached 1/3 of the business over the past several years –



How did TDG come to accumulate such a broad portfolio of products? The answer resides in a history of acquisitions as shown below –

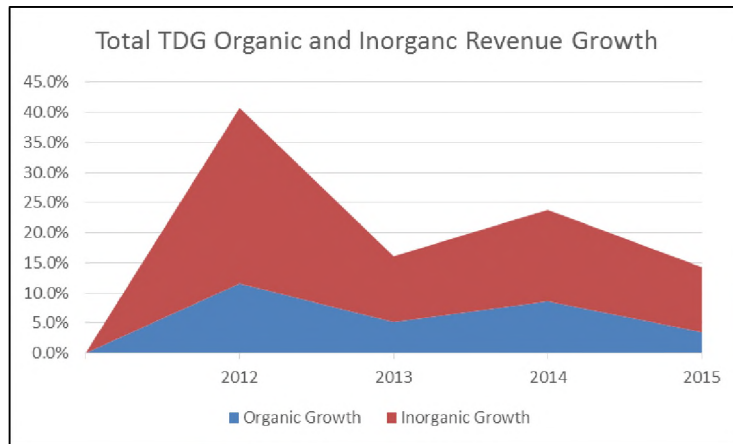


In fact, we actually went through each of TDG's historical acquisitions including what they paid and who was the seller (e.g. was it a strategic or financial seller). But perhaps more interesting is that TDG's acquisitions in themselves fit into a myriad of 26 business units.

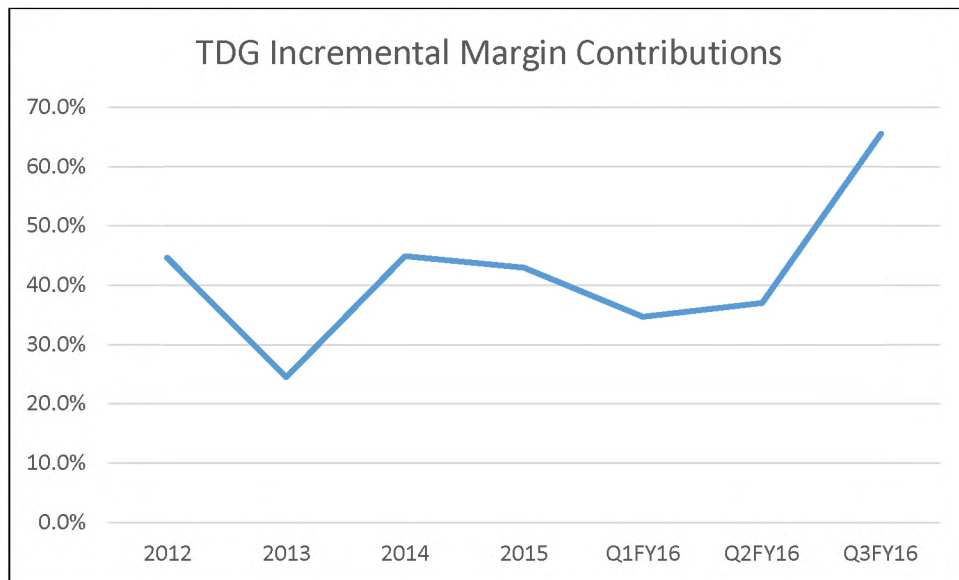
While these acquisitions certainly have contributed to overall growth of the business, they also don't distract from the firm's underlying stability which contributes to roughly 3% to 5% in organic growth –

<sup>5</sup> While TDG does manufacture a significant portion of their products in the U.S., they also manufacture some products in Belgium, China, Germany, Hungary, Malaysia, Mexico, Norway, Sri Lanka, Sweden, the United Kingdom, and even Singapore. "TDG FY'15 10-K," Edgar, p. 4 – 5, <https://www.sec.gov/Archives/edgar/data/1260221/000126022115000013/tdg2015-09x3010k.htm>

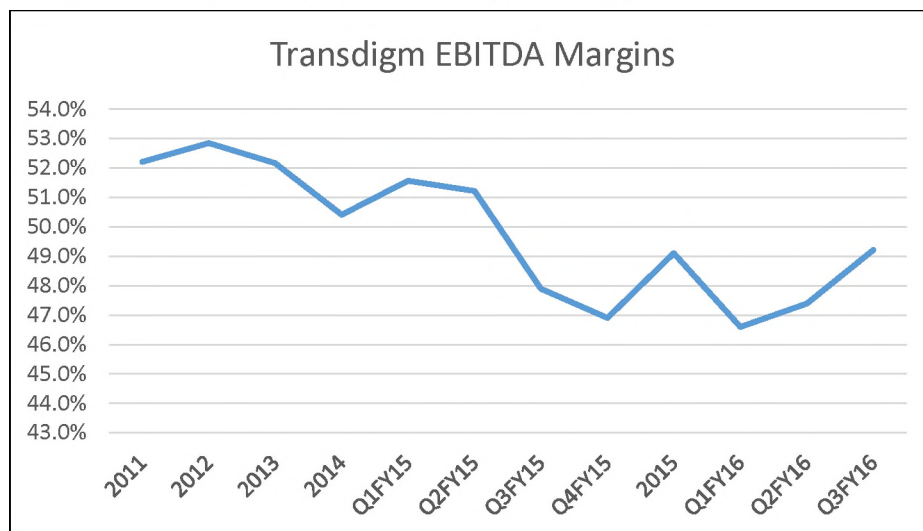




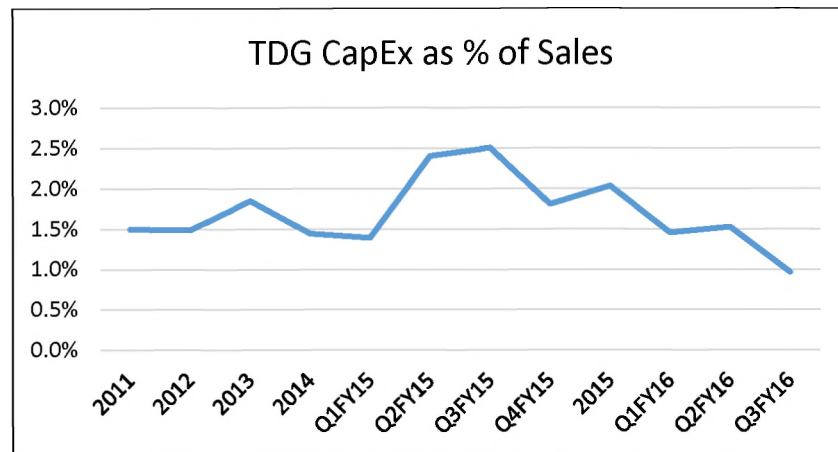
These acquisitions have also helped TDG sustain fairly high incremental margin contributions (40%+):



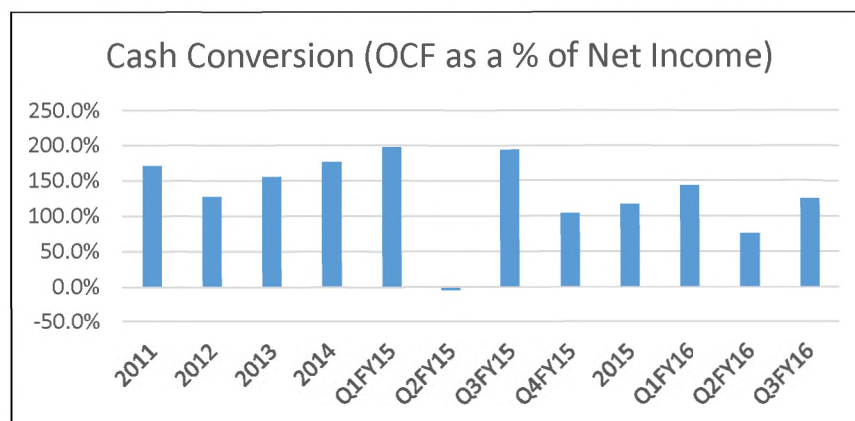
Which have corresponded to EBITDA margins in the high 40% range –



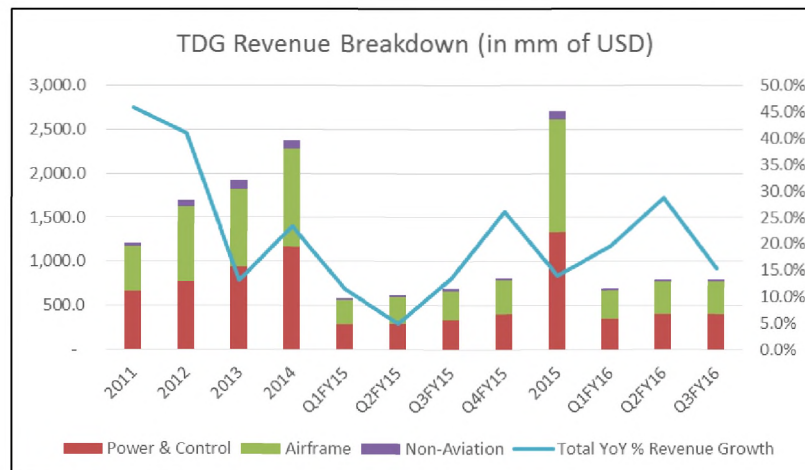
And considering the asset light nature of the business, CapEx is often less than 2.5% of sales –



Which in turn has produced a high degree of Cash Conversion for the business –



Each of these acquisitions fall into the reported business segments of which there are three: Power & Control, Airframe, and Non-Aviation. Each segment's contribution to total revenues is shown below –



We will discuss each of these segments briefly starting with Power & Control.

## II. Business Segments

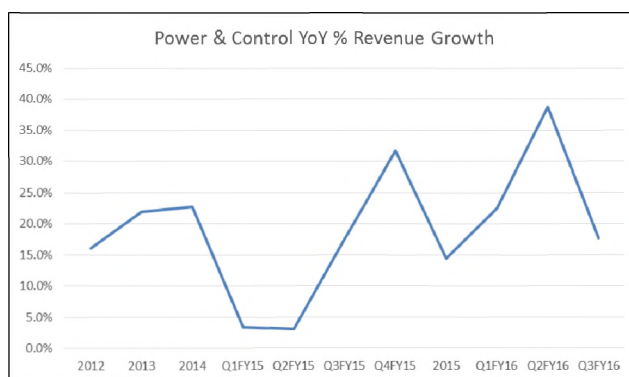
### 2.1 Power & Control Segment

The Power & Control segment commands almost 50% of Revenues and 55% of EBITDA. The segment primarily develops, produces, and market systems and components that predominately provide power to or control power of the aircraft utilizing electronic, fluid, power and mechanical motion control technologies.

As such, this department produces power or power control components for aircrafts, like electronic, fluid, power and motion control parts, power conditioning devices, specialized AC/DC<sup>6</sup> electric motors and generators and cargo loading and handling systems.

The primary customers of this segment are engine and power system suppliers, airlines, third party maintenance suppliers, military buying agencies and repair depots. Products are sold in the OEM and aftermarket end markets.<sup>7</sup>

The segment historically has grown fairly healthy with organic growth amounting to ~ 6% to 7% of total revenue growth –



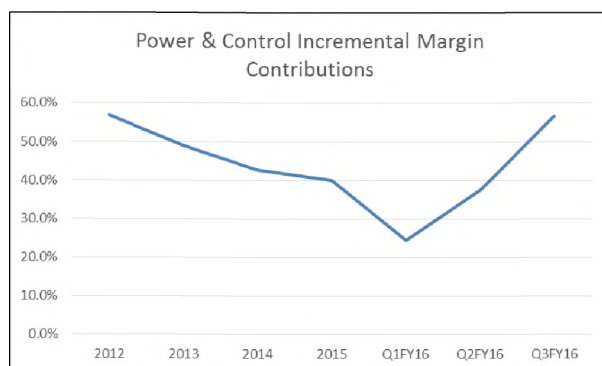
Naturally, the segment also possesses high incremental margin contributions that on average, are 40%+:

---

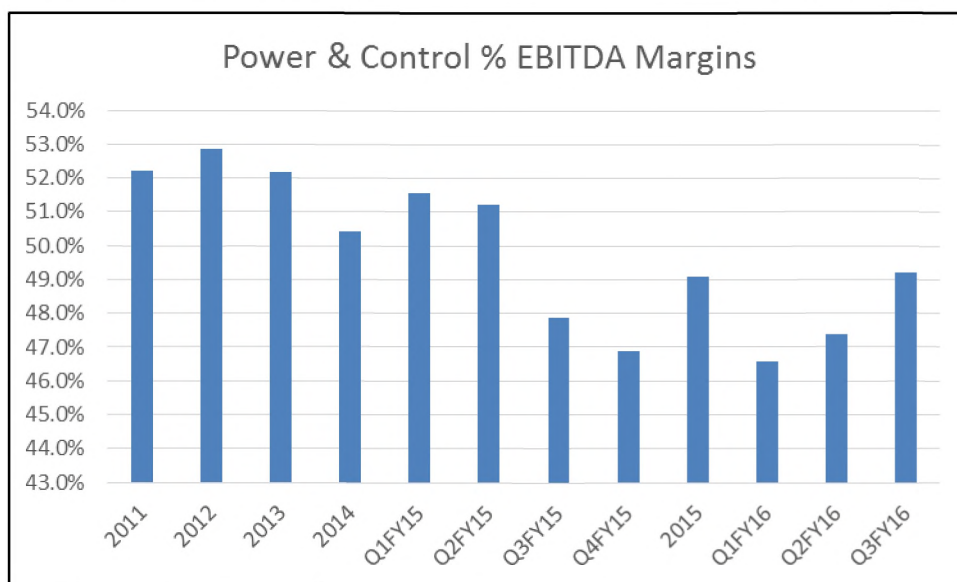
<sup>6</sup> Alternating Currents / Direct Currents. Direct Current goes in one direction and is often associated with a battery (think of a flashlight). In contrast, Alternative Current can go both directions such as a kitchen appliance that's plugged into a residential home.

<sup>7</sup> "Transdigm Group Inc. Profile," Reuters, accessed August 6, 2017, <http://in.reuters.com/finance/stocks/companyProfile?symbol=TDG.N>.





As such, the Power & Control Segment tends to command healthy EBITDA margins of 46%+:

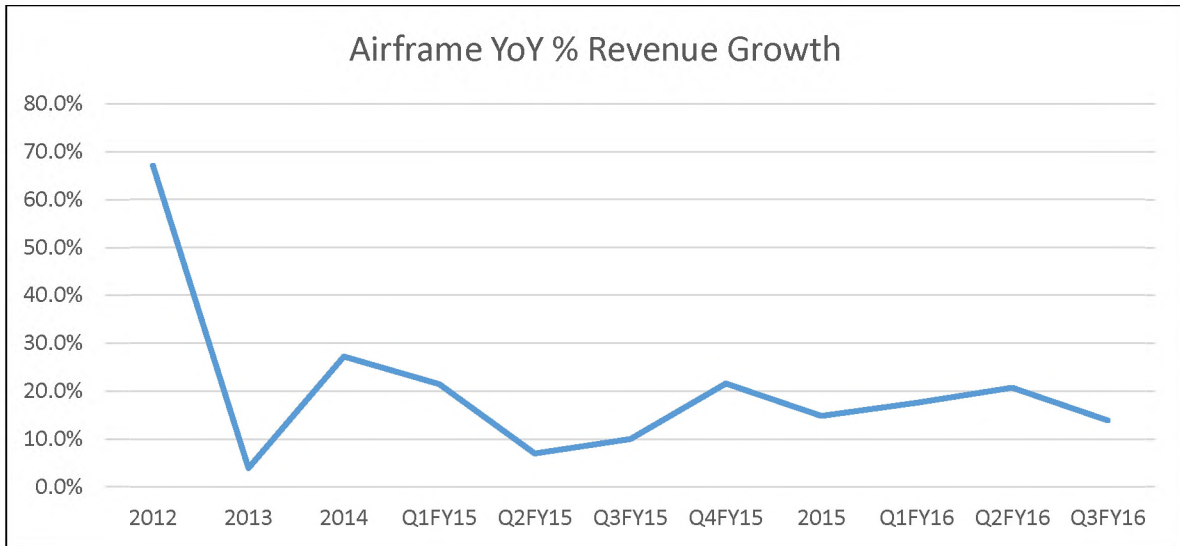


## 2.2 Airframe Segment

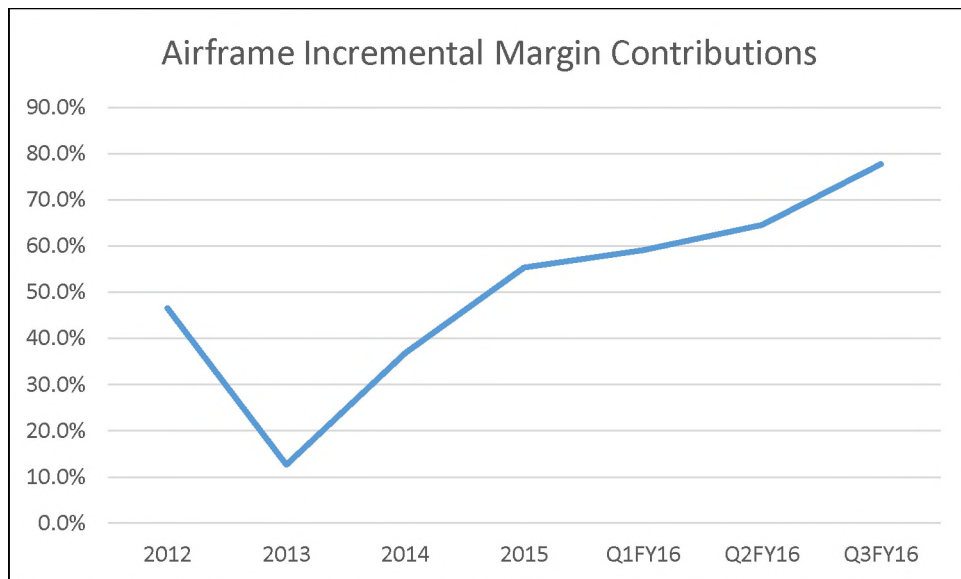
The Airframe segment represents about 47% of sales and 50% of total EBITDA. The segment provides non-power airframe products and cabin structure technologies. Major product offerings include engineered latching and locking devices, engineered connectors and elastomers, cockpit security components and systems, aircraft audio systems, specialized lavatory components, seat belts and safety restraints, engineered interior surfaces and related components, lighting and control technology, and cargo delivery systems<sup>8</sup>.

Because most incremental acquisitions have gone towards the Power & Control segment, revenue growth here has been lower but still trends 10%+. Organic Growth has trended around mid-to-high single digit growth:

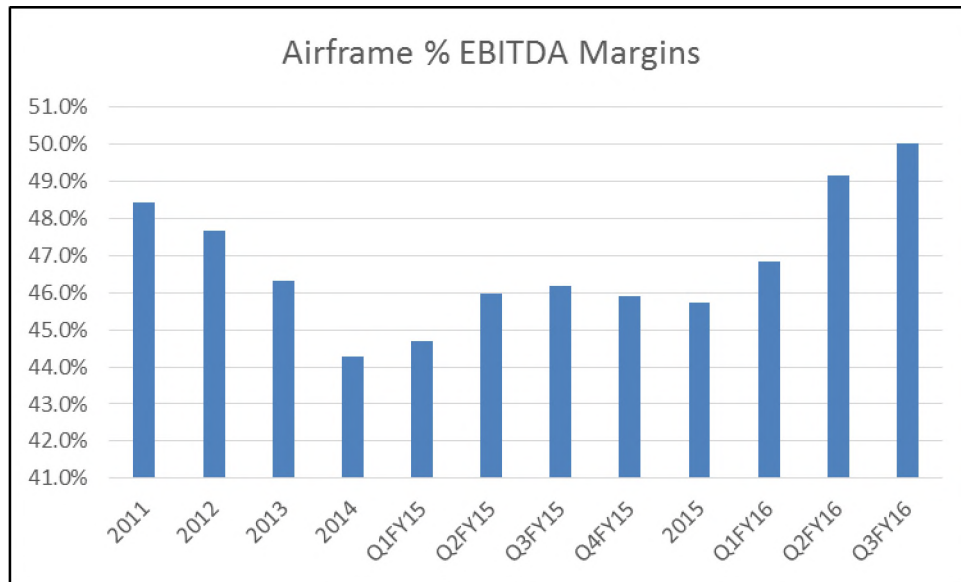
<sup>8</sup> "Transdigm Group Inc. Profile," Reuters, accessed August 6, 2017, <http://in.reuters.com/finance/stocks/companyProfile?symbol=TDG.N>.



Like the Power & Control segment, incremental margin contributions are incredibly high for this business –



Which has naturally resulted in fairly robust EBITDA margins for the Airframe segment –



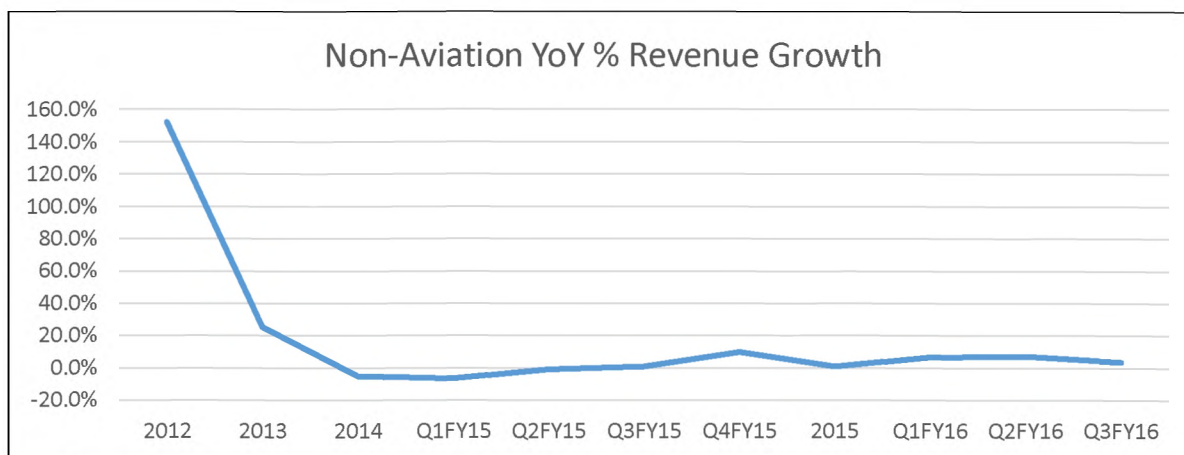
### **2.3 Non-Aviation Segment**

The last segment is the Non-Aviation Segment. This segment is incredibly small, making up less than 4% of total sales and roughly 2% of total firm EBITDA. As such, we won't spend much time here. As the name implies, the Non-Aviation segment includes operations that primarily develop, produce and market products for Non-Aviation markets.

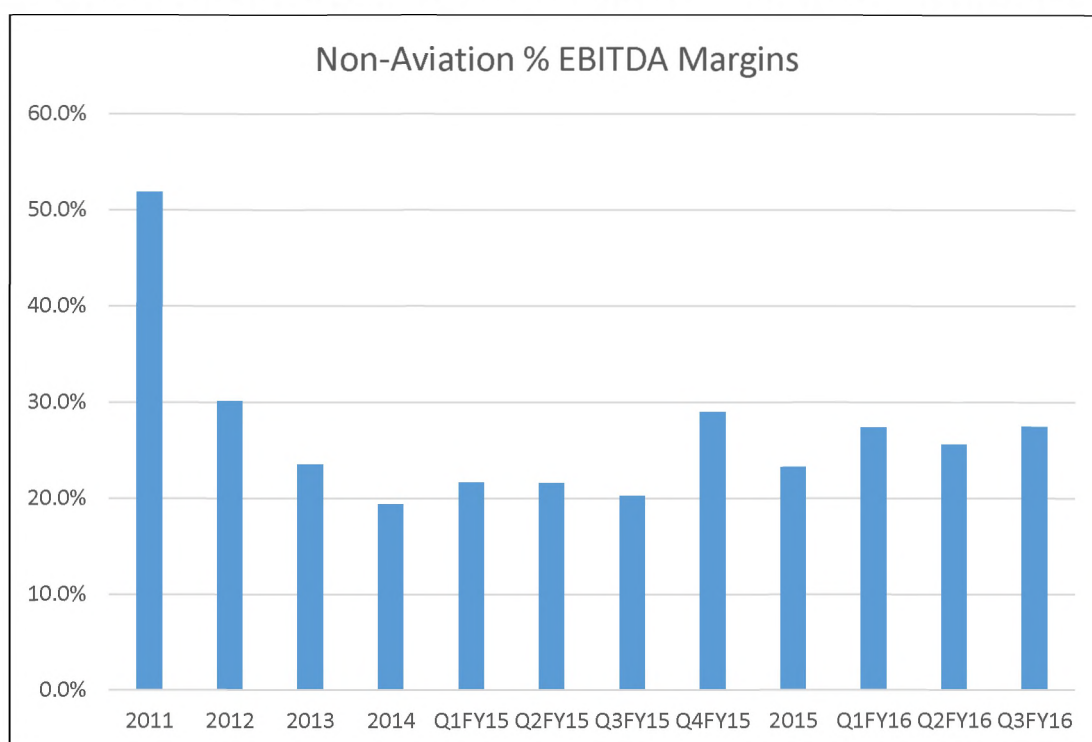
Major product offerings include seat belts and safety restraints for ground transportation applications, electro-mechanical actuators and controls for space applications, and refueling systems for heavy equipment in mining and construction. Primary clients include off-road vehicle suppliers, child restraint system suppliers, satellite and space system suppliers and manufacturers of heavy equipment, construction and other industries<sup>9</sup>.

It's fortunate that this segment is small as both revenue growth and EBITDA margins are far lower than the other two segments, which is due to TDG's management not pursuing any acquisitions here. Total organic growth did have some headwinds several years ago but has since been on upswing due to the cyclicity of the end markets served –

<sup>9</sup>"Transdigm Group Inc. Profile," Reuters, accessed August 6, 2017, <http://in.reuters.com/finance/stocks/companyProfile?symbol=TDG.N>.



We think the lack of acquisitions makes sense in the context of this segment's lower EBITDA margins –

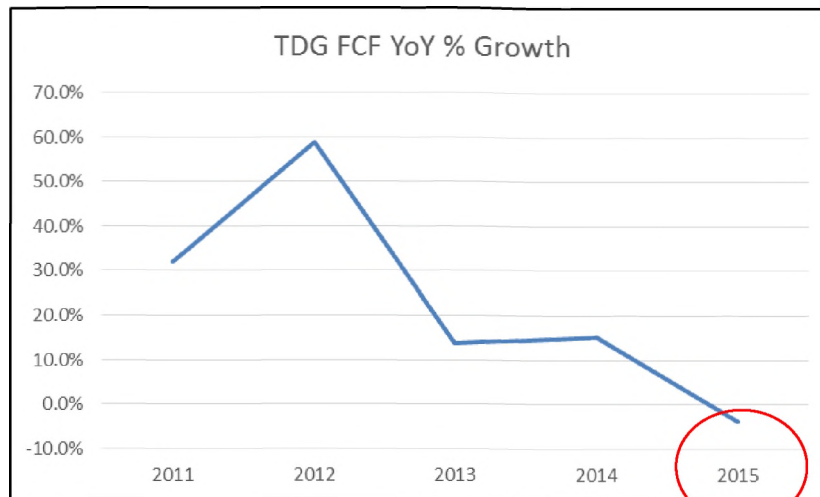
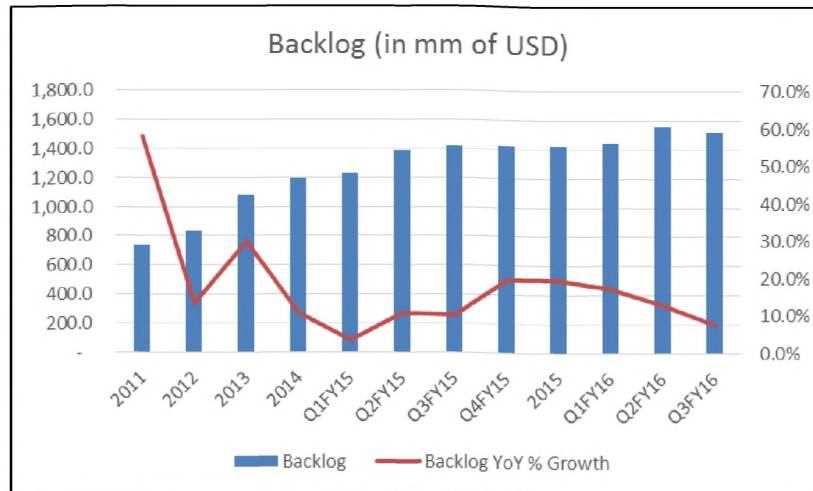


With that extensive overview, we will now move onto the core thesis points starting with Thesis Point 1.

### III. Investment Thesis

#### **3.1 Thesis Point 1: TDG's Moat Should Drive Future Organic EBITDA Growth**

If you glanced at the myriad of charts before, you'd notice that FY'15 was a bit of a 'rough patch' for TDG. This was actually due to some softness in the private jet market coupled the general airline cycle (airline cycles tend to occur every 7 years). The end result was a slowdown in bookings and an interruption to historically high FCF growth as shown below –



FY'15 Headwinds

These headwinds ignored what is an otherwise incredibly stable business. Let us explain –

TDG's products are mission critical parts for airplanes. Because FAA and international regulations preclude planes from departing with these critical parts, there's a bit of stability and inherent demand.<sup>10</sup>

More interesting, TDG does not products that are tailored to a customer's exact specifications. That's because they have intellectual property which they vigorously defend. These proprietary products – which comprise ~90% of their offerings – are much higher margin. When combined the fact that TDG is the sole supplier of ~80% of its offerings, this creates a powerful competitive dynamic.

<sup>10</sup> "A Comparison of DOD and Commercial Airline Purchasing Practices," United States General Accounting Office, accessed November 1999, <http://www.gao.gov/assets/230/228420.pdf>.



But we can dig even deeper. It turns out that TDG's parts are actually a low part of the overall cost structure for airplanes. To make an airplane costs hundreds of thousands of dollars. Yet ASP's for TDG can range from \$500 to \$5,000 while some other products are even \$10,000. But this is still cheap relative to the entire budget meaning TDG can get away with increasing prices. Spare parts are a minor expense for airlines compared to Fuel and Personnel. And when OEMs seek to drive cost cuts they target bigger items like engines.

Even the Department Of Defense<sup>11</sup> admits they have very little negotiating leverage and typically accept the offered price. While there have been challenges to 'price increases' in some industries lately, we think there's a nuance with TDG.

- First, airline manufacturers don't have the same public sympathy as individuals that have increasingly high medical expenditures;
- Second, most manufacturers are reluctant to switch;
- Third, the price increases, on average, are roughly 5% to 7%, which is far tamer than increasing 50%+ per year.

Taken together, we think that assuming at 5% to 7% top-line organic growth is sensible. In fact, if we ignore the FY'15 headwinds, we can see that organic revenue growth is reflective of those price increases –

	Year Ended September 30,				2015				2016				
USD in millions, except per share and per unit data	2011	2012	2013	2014	Q1	Q2	Q3	Q4	2015	Q1	Q2	Q3	Q4
<b>Organic &amp; Inorganic % Growth Contribution</b>													
<b>Power &amp; Control Organic Growth</b>													
Commercial OEM	N/A	2.2%	0.5%	0.9%	N/A	-1.4%	1.1%		N/A	-3.0%	-0.6%	0.1%	
Commercial After Market	N/A	0.7%	1.7%	3.4%	N/A	1.8%	-0.7%		N/A	-2.3%	4.3%	5.6%	
Defense	N/A	4.5%	-2.3%	1.8%	N/A	2.1%	1.6%		2.0%	0.0%	-2.5%	1.7%	
Total Power & Control Organic Growth	N/A	7.5%	-0.1%	6.1%	3.4%	2.4%	2.1%		2.8%	-5.4%	1.2%	7.3%	
Total Power & Control Inorganic Growth	N/A	7.5%	9.0%	16.6%	0.0%	0.0%	15.4%		11.7%	27.9%	37.6%	10.3%	
Total Power & Control Revenue Growth	N/A	16.1%	21.9%	22.7%	3.4%	3.0%	17.5%		14.5%	22.5%	38.8%	17.6%	
<b>Airframe Organic Growth</b>													
Commercial OEM	N/A	9.1%	5.9%	4.1%	N/A	N/A	-1.0%		1.1%	1.5%	0.5%	4.5%	
Commercial After Market	N/A	3.8%	-1.2%	6.6%	N/A	N/A	2.1%		3.0%	1.6%	5.2%	3.7%	
Defense	N/A	2.9%	1.8%	1.2%	N/A	N/A	3.2%		-0.1%	-0.3%	1.6%	1.4%	
Total Airframe Organic Growth	N/A	15.8%	6.5%	11.9%	2.4%	4.0%	4.3%		4.0%	2.5%	7.2%	9.7%	
Total Airframe Inorganic Growth	N/A	51.2%	9.8%	15.1%	19.1%	3.0%	6.6%		10.8%	15.1%	13.4%	4.2%	
Total Airframe Revenue Growth	N/A	67.0%	4.0%	27.2%	21.5%	7.0%	10.9%		14.8%	17.6%	20.7%	13.9%	
<b>Non-Aviation Organic Growth</b>													
Commercial OEM	N/A	N/A	N/A	N/A	N/A	N/A	N/A		0.6%	N/A	N/A	N/A	
Commercial After Market	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	
Defense	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	
Total Non-Aviation Organic Growth	N/A	N/A	-13.7%	-7.9%					0.8%	6.8%	7.2%	N/A	
Total Non-Aviation Inorganic Growth	N/A	N/A	38.6%	2.8%					0.0%	0.0%	0.0%	N/A	
Total Non-Aviation Revenue Growth	N/A	N/A	25.4%	-5.1%					0.8%	6.8%	7.2%	3.7%	
<b>Total Firm Growth</b>													
Commercial OEM	N/A	6.6%	3.0%	2.6%	1.7%	0.2%	0.0%		0.7%	-0.7%	0.2%	2.3%	
Commercial After Market	N/A	2.5%	0.2%	4.7%	2.0%	2.5%	0.7%		1.6%	-0.4%	4.6%	4.5%	
Defense	N/A	2.5%	4.0%	1.4%	-0.7%	0.7%	2.3%		1.3%	-0.2%	0.5%	1.3%	
Total Organic Growth	N/A	11.6%	5.2%	8.6%	3.0%	3.4%	3.0%		3.5%	-1.2%	4.3%	8.1%	
Total Inorganic Growth	N/A	29.2%	10.9%	15.2%	8.4%	1.4%	10.5%		10.8%	20.7%	24.3%	7.1%	
Total Revenue Growth	N/A	40.7%	16.1%	23.8%	11.4%	4.8%	13.5%		14.3%	19.5%	28.6%	15.2%	

Organic Growth Rate Primarily Comprised of 'Price Increases.'

<sup>11</sup> "A Comparison of DOD and Commercial Airline Purchasing Practices," United States General Accounting Office, accessed November 1999, <http://www.gao.gov/assets/230/228420.pdf>.

Yet TDG's strategy doesn't stop there. TDG runs a lean ship with low OpEx. This is partially due to aggressive cost cutting for incremental acquisitions and in part due to CEO's Nick Howley's stake in the firm (*more on this later*).

### 3.2 Thesis Point 2: TDG's Track Record of Making Intelligent Acquisitions Should Drive Inorganic Returns

As previously mentioned, TDG has historically made intelligent acquisitions that complement its existing offerings. This isn't just a 'roll-up' story but rather a means for TDG to strengthen its competitive positioning, take advantage of scale and disciplined a cost structure, and to grow. We did go through every one of TDG's historical acquisitions. We noted several things –

- First, there is definitely a healthy mix of both strategic and financial sellers. We note how some of these sellers have done multiple deals with TDG. While other sellers benefitted as both a buyer and seller by virtue of being on TDG's board. For example, Berkshire Partners is on the Board of TDG. Berkshire benefited from a sale of another of their portfolio companies (AmSafe) back in 2012.<sup>12</sup>
- These acquisitions are almost entirely paid for in cash though the firm will issue debt and use the proceeds to make incremental acquisitions.
- Most of the acquisitions tilt towards Power & Control though there is an occasional Airframe acquisition.

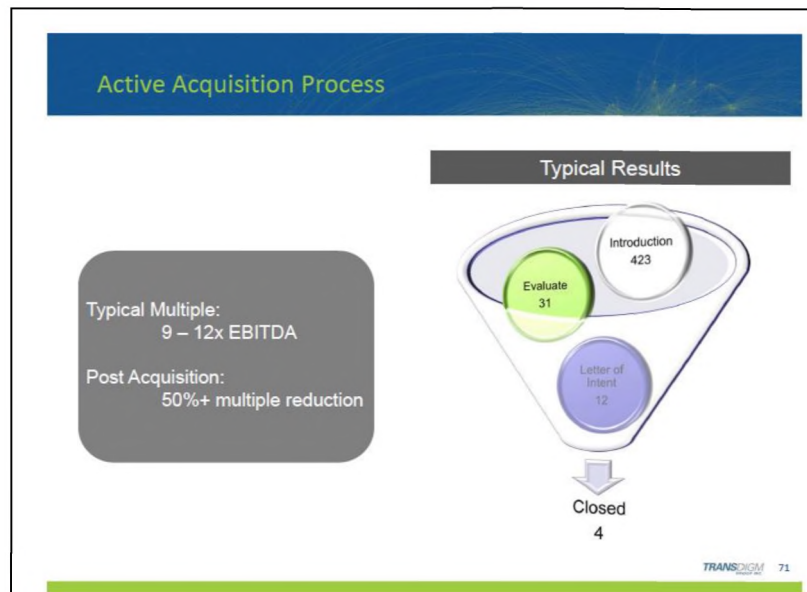
We took several approaches to evaluate the return on the acquisitions themselves. One simple approach was to compare Operating Cash Flows per dollar amount of acquisition dollars spent –

	Year Ended September 30,				2015				2016				
USD in millions, except per share and per unit data	2011	2012	2013	2014	Q1	Q2	Q3	Q4	2015	Q1	Q2	Q3	Q4
Operating Cash Flows	260.4	413.9	470.2	541.2	189.0	(6.0)	191.1	146.9	520.9	164.1	105.0	175.3	-
% Margin	21.6%	24.3%	24.4%	22.8%	32.2%	-1.0%	27.6%	18.1%	19.2%	23.4%	13.2%	22.0%	
% YoY Growth	32.0%	59.0%	13.6%	15.1%	63.3%	-105.8%	413.7%	-12.5%	-3.7%	-13.1%	1838.0%	-8.3%	
Levered Free Cash Flow	242.4	388.6	434.7	507.1	180.8	(20.9)	173.8	132.4	466.1	154.0	92.9	167.6	-
% Margin	20.1%	22.9%	22.6%	21.4%	30.8%	-3.4%	25.1%	16.3%	17.2%	21.9%	11.7%	21.0%	
% YoY Growth	31.4%	60.4%	11.8%	16.7%					-8.1%	-14.9%	544.4%	-3.6%	
+ Acquisition Related Expenses	(1,650.4)	(868.7)	(483.3)	(311.9)	-	(723.2)	(570.3)	(330.8)	(1,624.3)	-	(144.4)	(998.6)	
Levered Free Cash Flow, net of Acquisitions	(1,408.0)	(480.1)	(48.6)	195.2	180.8	(744.1)	(396.5)	(198.4)	(1,158.2)	154.0	(51.5)	(831.0)	-
% YoY Growth	-7984%	65.9%	89.9%	501.8%					-693.3%	-14.9%	93.1%	-109.6%	

If we assume some lag and take a run-rate for FY'16, we are yielding a return of roughly 9% to 15%<sup>13</sup>. We find this 'okay' but note that the cost savings and general nature of this industry create incredible levels of 'lags' to the business.

<sup>12</sup> "Berkshire Partners Announces Agreement to Sell AmSafe to TransDigm," Berkshire Partners, <http://www.berkshirepartners.com/berkshire-partners-announces-agreement-to-sell-amsafe-to-transdigm>.

<sup>13</sup> This depends on assumptions relating to the run-rate for Q4 FY'16.



In some sense, TDG is essentially an aerospace Private Equity (PE) shop imbedded in a highly profitable industrial company. PE is part of the company's heritage, as TDG was PE owned from 1993 until their IPO in 2006. Through disciplined acquisitions TDG aims to achieve returns exceeding those of top quartile private equity funds while providing shareholders with the liquidity of the public markets.

TDG has structural advantages as an acquirer over traditional PE or strategic buyers:

- a) Compared to PE, TDG brings deep sector expertise and the ability to save on costs through consolidating factories and G&A savings;
- b) TDG employs the capital structure of a PE fund, enabling competitive bids versus strategic

TDG only has about 4% of the total addressable market currently, creating a very long runway for further M&A

- a) Over the last one, three, and five year intervals cash allocated to M&A has exceeded cash flow from operations highlighting the array of reinvestment opportunities available; and

We think the Street doesn't model incremental M&A which tends to discount the actual NPV of TDG (assuming TDG can generate positive returns from incremental M&A which we think TDG can and does). Considering how this is part of TDG's core strategy, we don't think this can be ignored. We think this ignores ~ 4% to 8% in incremental inorganic EBITDA growth.<sup>14</sup>

With that said, we now turn to Thesis Point 3.

### **3.3 Thesis Point 3: TDG's Capital Allocation Policies Should Magnify Returns Even Further**

<sup>14</sup> This is partially based on the implied multiples paid, coupled with synergies and our own arbitrary discounting.



TDG's highly predictable cash flow stream allows it to afford a healthy dose of leverage. But we contend TDG takes things even further and believe that they take leverage to levels that are a rarity among public companies.

In fact, TDG essentially hyper-levered the business back in 2013 when they took on more debt and essentially were running 'net levered' as shown below –

	Year Ended September 30,				2015				2016					
USD in millions, except per share and per unit data	2011	2012	2013	2014	Q1	Q2	Q3	Q4	2015	Q1	Q2	Q3	Q4	
BALANCE SHEET														
Metrics														
Net Debt / (Cash)	2,762.2	3,178.6	5,166.5	6,653.6	6,461.5	7,146.0	7,533.7	7,713.3	7,713.3	7,537.1	7,723.3	8,539.0	-	
Debt / EBITDA	5.7x	4.7x	7.0x	7.3x				7.2x	7.2x	6.9x	6.5x	7.6x	0.0x	
Net Debt / EBITDA	5.0x	4.1x	6.3x	6.5x				6.6x	6.6x	6.2x	6.1x	6.4x	0.0x	
Assets														
Cash and Cash Equivalents	376.2	440.5	564.7	819.5	1,011.6	392.5	915.4	714.0	714.0	805.3	612.0	1,666.7		
ST Investments / Marketable Securities														
Cash and ST Investments, net	376.2	440.5	564.7	819.5	1,011.6	392.5	915.4	714.0	714.0	805.3	612.0	1,666.7	-	
Total Assets	4,513.6	5,576.1	6,148.9	6,756.8	6,913.6	7,226.2	8,350.4	8,427.1	8,427.1	8,330.0	8,359.5	10,570.5	-	
Liabilities														
Current Portion of Long-Term Debt	15.5	20.5	31.0	39.3	39.3	39.3	44.2	43.8	43.8	43.4	43.5	52.6		
ST Borrowings - Trade Receivable Securitization Facility	-	-	-	200.0	200.0	200.0	200.0	200.0	200.0	199.8	199.9	200.0		
Long-Term Debt	3,122.9	3,598.6	5,700.2	7,233.8	7,233.8	7,299.3	8,204.9	8,183.5	8,183.5	8,099.2	8,091.9	9,953.1		
Total Debt	3,138.4	3,619.1	5,731.2	7,473.1	7,473.1	7,538.6	8,449.1	8,427.3	8,427.3	8,342.4	8,335.3	10,205.7	-	
Total Liabilities	3,693.8	4,240.8	6,485.3	8,312.9	8,378.3	8,552.4	9,519.4	9,465.4	9,465.4	9,294.2	9,321.3	11,378.7	-	
Shareholders' Equity														
Shareholders' Equity	819.9	1,335.3	(336.4)	(1,556.1)	(1,464.7)	(1,326.2)	(1,169.0)	(1,038.3)	(1,038.3)	(964.3)	(961.8)	(808.2)	-	
Liabilities and Shareholders' Equity														
Liabilities and Shareholders' Equity	4,513.6	5,576.1	6,148.9	6,756.8	6,913.6	7,226.2	8,350.4	8,427.1	8,427.1	8,330.0	8,359.5	10,570.5	-	

This leverage greatly magnified returns. In fact, based on our compounder playbook equation, we believe leverage is actually the greatest piece of return for TDG, representing ~ 15% in returns.<sup>15</sup> Such high leverage not only magnifies returns but would also magnify losses in times of crisis, a dynamic we will discuss later under risks.

Still, the debt itself is a mix of PE style debt with no amortization and high yield bonds (~ 5.4% total cost of debt), with maturities out to 2020 – 2024 and ~75% of the rates locked-in or hedged out.

Aside from special dividends<sup>16</sup> paid in 2009, 2012, 2013, and 2014, TDG doesn't pay a regular dividend. Even more interesting is that TDG almost never repurchases shares, opting to use leverage and excess cash to reinvest in the business or pursue incremental roll-ups. This changed in FY'16 after the 'frictional FY'15' put a damper on the stock and the firm used its 2014 share repurchase program to buy back shares.

And in the January of 2016, management actually increased the amount allowed under their pre-existing share repurchase program, quote:

*"On October 22, 2014, our Board of Directors authorized a stock repurchase program replacing our previous repurchase program permitting us to repurchase a portion of our outstanding shares not to exceed \$300 million in the aggregate. During fiscal 2016, until the \$300 million program was replaced on January 21, 2016, the Company had repurchased 452,187 shares of its*

<sup>15</sup> This is based on the implied returns from organic and inorganic growth.

<sup>16</sup> This amounted to ~ \$3B, which is a lot for a firm with a *current* TEV of ~\$24B. These were paid when M&A opportunities were lukewarm.

common stock at a gross cost of approximately \$98.7 million at the weighted-average price per share of \$218.23.

On January 21, 2016, our Board of Directors authorized a stock repurchase program replacing the \$300 million program with a repurchase program permitting us to repurchase a portion of our outstanding shares not to exceed \$450 million in the aggregate. As of July 2, 2016, the Company had repurchased 563,200 shares of its common stock at a gross cost of approximately \$109.1 million at the weighted-average price per share of \$193.67 under the \$450 million stock repurchase program. During the thirteen week period ended July 2, 2016, there were no issuer purchases of its common shares outstanding.”<sup>17</sup>

We think this is telling for several reasons –

- First, it tells us that management isn’t afraid to repurchase shares if it’s optimal to do so. This means even if the M&A pipeline isn’t attractive.
- Second, the fact that the program was expanded and still hasn’t even exceeded the original \$300mm repurchase program, could indicate that management is cognizant of where we are in the cycle; and
- Three, the lack of buybacks in Q2 could be indicative that management thinks shares are currently expensive, or perhaps more optimistically, they think they are better served allocating capital elsewhere.

And while TDG does have a lot of leverage, there are two things to consider –

- (a) 75% of their debt is actually fixed and not due until 2020 and beyond; and
- (b) They still have ~ \$400mm available to borrow for incremental M&A.<sup>18</sup>

On a high level, the combination of M&A, special dividends, and share buybacks tells us that management isn’t afraid to optimally deploy capital.

So who runs TDG? This brings us to Management.

#### IV. Management Team

Douglas Peacock was the co-founder of TDG and the retired CEO/Chairman.<sup>19</sup> But today, TDG is run by Nicholas Howley who owns 1.49% of TDG (in other words, there is skin in the game) –

---

<sup>17</sup> “TDG Q3 FY’16 10-Q,” p. 37, Edgar,

<https://www.sec.gov/Archives/edgar/data/1260221/000126022116000077/tdg2016q310-q.htm>.

<sup>18</sup> When combined with cash, TDG actually has ~ \$1.850B for incremental acquisitions.

<sup>19</sup> “TDG FY’16 Proxy,” p. 4, Edgar,

<https://www.sec.gov/Archives/edgar/data/1260221/000119312516434069/d30579ddef14a.htm>.



Beneficial Owner	Amount and Nature of Beneficial Ownership <sup>(1)</sup>			
	Shares	Shares Subject to Options Currently Exercisable or Exercisable within 60 Days	Total Number of Shares	Percentage of Class
William Dries	1,013	4,790	5,803	*
Mervin Dunn	2,143	17,890	19,833	*
Michael Graft <sup>(2)</sup>	20,087	1,790	28,677	*
Sean P. Hennesey	15,717	17,890	33,407	*
W. Nicholas Howley <sup>(3)</sup>	26,735	786,700	813,435	1.45%
Raymond F. Laubenthal <sup>(4)</sup>	165,938	245,000	361,938	*
Douglas W. Pincoff <sup>(5)</sup>	3,787	17,890	21,477	*
Robert J. Small <sup>(6)</sup>	2,771,100	7,292	2,778,392	5.17%
John Stier	91	3,990	3,481	*
Terrance Paradise <sup>(7)</sup>	5,000	22,400	27,400	*
Robert Henderson	16,000	208,400	224,400	*
Kevin Stern <sup>(8)</sup>	13,000	39,600	52,600	*
Gregory Puffin	11,000	140,000	151,000	*
All directors and executive officers as a group (20 persons) <sup>(9)</sup>	3,189,459	2,086,807	5,196,266	9.36%

(1) Includes shares of which the listed beneficial owner is deemed to have the right to acquire beneficial ownership under Rule 13d-3 under the Securities Exchange Act, as amended (the "Exchange Act"), within 60 days of December 18, 2015. The number of shares outstanding used in calculating the percentage of beneficial ownership for each person listed below includes the shares underlying options held by such persons that are exercisable within 60 days of December 18, 2015, but excludes shares underlying options held by any other person. Percentage of ownership is based on 53,726,120 shares of common stock of the Company outstanding as of December 18, 2015.

(2) Includes 3,382 shares held by Mr. Graft as the trustee of certain trusts created for the benefit of his minor children and 10,048 shares held by a trustee of a trust created by Mr. Graft's wife for the benefit of their children. Also includes 259 shares which are beneficially owned by Wertburg Pincoff and as to which Mr. Graft disclaims beneficial interest, except to the extent of his pecuniary interest therein.

(3) Includes options to purchase 18,904 shares that are held by Brainerd Capital Partners, Ltd. ("Brainerd"). By virtue of his indirect ownership interest in Brainerd, Mr. Howley may be deemed to be the beneficial owner (within the meaning of Rule 13d-3 under Exchange Act) of the options that are owned by Brainerd. Mr. Howley disclaims beneficial ownership of all options owned by Brainerd and reported herein as beneficially owned except to the extent of any pecuniary interest therein.

(4) Includes 30,659 shares held in trust for the benefit of Mr. Laubenthal's children. Mr. Laubenthal does not have any direct voting or dispositive power over the trust or economic interest therein and, therefore, disclaims beneficial ownership.

(5) Includes 3,000 shares held in trust by Mr. Pincoff's wife as trustee. Mr. Pincoff does not have any direct voting or dispositive power over the trust or economic interest therein and, therefore, disclaims beneficial ownership.

(6) Includes 2,711,947 held by entities related to Berkshire Partners LLC (see footnote (5) above). Mr. Small disclaims beneficial ownership of all shares owned or controlled by the Berkshire entities except to the extent of any pecuniary interest therein. Also includes 8,113 shares held by Mr. Small as trustee over which he has voting power but does not have any economic interest.

(7) Includes 4,700 shares of restricted stock, subject to forfeiture if Mr. Paradise is no longer employed by the Company. The risk of forfeiture will lapse (i.e., the stock will "vest") as to 1,566 shares on April 22, 2016; as to 1,566 shares on April 22, 2017 and as to 1,567 shares on April 22, 2018.

(8) Includes 13,000 shares of restricted stock, subject to forfeiture if Mr. Stern is no longer employed by the Company. The risk of forfeiture will lapse (i.e., the stock will "vest") as to 4,333 shares on December 31, 2015, as to 4,333 shares on December 31, 2016 and as to 4,334 shares on December 31, 2017.

(9) Includes shares subject to options exercisable within 60 days of December 18, 2015. Includes (i) 9,362 shares held by Mr. Graft as trustee and 16,006 held by a trustee of a trust created by Mr. Graft's wife and 260 shares which are beneficially owned by Wertburg Pincoff and as to which Mr. Graft disclaims beneficial interest, except to the extent of his pecuniary interest therein (see footnote (2)); (ii) 18,904 options to purchase shares of common stock, which Mr. Howley may be deemed to beneficially own by virtue of his indirect ownership interest in Brainerd (see footnote (3)); (iii) 30,659 shares held in trust for the benefit of Mr. Laubenthal's children (see footnote (4)); (iv) 3,000 shares held by Mr. Pincoff's wife as trustee of a trust (see footnote (5)); (v) shares held by entities related to Berkshire Partners LLC and 8,113 shares held by Mr. Small as trustee (see footnote (6)); (vi) 4,700 shares of restricted stock held by Mr. Paradise, which are subject to forfeiture (see footnote (7)); (vii) 13,000 shares of restricted stock held by Mr. Stern, which are subject to forfeiture (see footnote (8)); (viii) 26,675 shares held in trust for the benefit of the children of James Skilling, Executive Vice President.

Howley's compensation involves a fairly modest salary and base (\$1mm salary and \$1mm bonus per year). But it also heavily inclusive of option awards. These option awards are actually based on performance metrics that revolve around successful compounding of cash flows.

However, in order for Howley to have his options to vest, the TDG stock must achieve a 10% CAGR. Yet TDG also looks at the success of acquisitions, cash flow generations, and the impact of any stock dilution when looking at compensation.<sup>20</sup>

We also note that in certain M&A transactions, Howley's brother<sup>21</sup> has been involved as a seller. We don't make any mistake on how this rubs us the wrong way, especially since:

- Howley wasn't a founder of TDG; and
- TDG isn't a private firm and Howley isn't majority owner.

We think so long as acquisitions are appropriate, we can overcome our hesitations. Yet we weigh this much higher on terms of negatives as most given our background and our general disdain for the investment community just becoming 'complacent' with corporate governance.

The Board is made up of Private Equity-like individuals like Robert Small (Berkshire Partners) who owns 5.17%. These insiders aren't shy about taking advantage of when they perceive TDG to be 'cheap.'<sup>22</sup> These PE board members also have historically sold their portfolio companies to TDG which also rubs us the wrong way. **STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP**

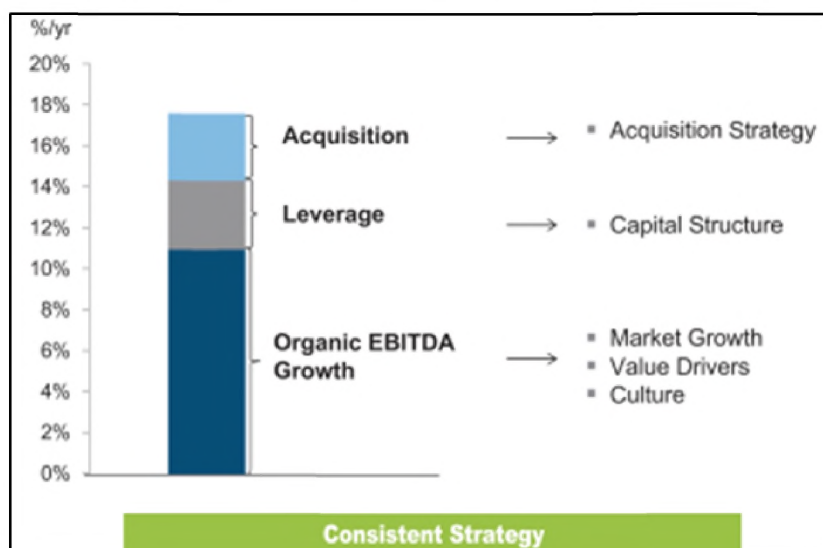
<sup>20</sup> They also look at adjusted EBITDA figures. There is a risk to all of this too as it can promote aggressive pursuits all for the sake of a 'higher' stock price.

<sup>21</sup> This is dug up from our own diligence that we kept out of the model to give Howley and his extended family privacy. However, a good portion of this information can be readily dug up with some basic internet research skills.

<sup>22</sup> "TDG Statement of Changes in Beneficiary Ownership", SEC, accessed by March 7, 2016, [https://www.sec.gov/Archives/edgar/data/1234544/000091957416011663/xslF345X03/small\\_transdigm-03072016.xml](https://www.sec.gov/Archives/edgar/data/1234544/000091957416011663/xslF345X03/small_transdigm-03072016.xml).

The PE mindset of the board makes sense given the high degrees of leverage that TDG employs.

More interesting is that management actually leverages our playbook formula; yet we actually think the true 'weights' are a bit different –



We think this general framework is a 'good' thing but we also have enough experience to recognize some dangers from the compensation structure as it relates to other risks alluded to earlier.

## V. Valuation

Considering the compounder formula, TDG essentially can attribute ~ 7% to organic growth, 4% to acquisitions, and ~ 15% to leverage. All told, this amounts to ~ 28% earnings growth.<sup>23</sup> This is actually close to the firm's earnings CAGR of 30.9% for the past five years.

This kind of growth naturally scares traditional value investors. Questions of sustainability of growth, pipeline of acquisitions, and the ability to continue to 'compound' are natural concerns.

But considering the historical growth, we definitely do apply an aggressive FCF multiple of 25x as shown below –

<b>FCF Valuation</b>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Free Cash Flow	435.0	642.3	749.4	961.8	1,218.0
FCF/Share	\$8.05	\$12.13	\$14.39	\$18.73	\$24.01
FCF/share Growth		50.6%	18.7%	30.2%	28.2%
Target Forward Multiple	<u>25.00x</u>	<u>25.00x</u>	<u>25.00x</u>	<u>25.00x</u>	<u>25.00x</u>
Price	\$201.30	\$303.13	\$359.70	\$468.25	\$600.13
<b>IRR</b>		4.9%	11.6%	17.5%	20.0%

Yet there are three points to consider –

<sup>23</sup>  $(1.07) \times (1.04) \times (1.15) - 1 \sim 28\%$ .

- First, while TDG's multiple is higher than most comps, the historical FCF multiple for TDG has always been elevated given its moat, management, and growth profile. In fact, on average, TDG has traded on average around 24x to 25x FCF so we don't think we are being that unreasonable.
- Second, one way to view this is looking at how we think FCF could trend over the next 5 years. Our FY'16 projections are fairly modest. We note that despite the 'rough' FY'15, TDG actually managed to achieve \$466.1mm in FCF. And TDG achieved \$507.1mm in FCF in FY'14. In other words, our FY'16 FCF (the 'base') is lower than the past two years. If we normalize these figures into a FY'17 figure (the firm is on September calendar year), we get the more normalized FCF trend of about \$642.3mm.<sup>24</sup> In this light, we are essentially betting that FCF can 'double' in 4 years (hence the 20% IRR). We think this is actually possible.

We think that framework of 'cash inflows and outflows' aligns with TDG's private-equity mindset and essentially removes the impact of the multiple. While we have a sensitivity table, we think this is a bit misguided considering that management has a history of beating their guidance given acquisitions.<sup>25</sup>

The quintessential question becomes one of their ability to achieve a certain level of FCF by 2020. Considering the management, patient capital invested, and the characteristics of the business, we don't think that's too difficult.

---

<sup>24</sup> By normalized, we are saying if the progression of growth continued unabated from FY'14 to FY'16.

<sup>25</sup> They are more 50-50 on GAAP metrics due to timing and frictional costs.

## VI. Appendix

### Dry Powder Available for Acquisitions

**Dry Powder in Excess of \$1.5 B Available Immediately After Recent Financing and Assuming Completion of DDC Acquisition**

**Pro Forma Cash 4/2/2016** **≈ \$1,450**

**Additional Borrowing Available Under Credit Agreement** **≈ 400**

**Dry Powder Available for Acquisitions** **≈ \$1,850**

TRANSDIGM GROUP INC. 109

### Acquisition Integration Process - Timeline

<u>Actions - General</u>	<u>Time After Acquisition (days)</u>
➤ Present TransDigm, Our Culture and Value Generation Strategy .....	0 - 15
➤ Control Working Capital and Establish Financial Plan .....	0 - 90
➤ Evaluate Key Staff Personnel Competency .....	0 - 30
➤ Review OE/AM Contracts and Effect Actions .....	15 - 45
➤ Implement Productivity Plan (Business Wide) and Ongoing Production Improvement Processes .....	0 - 90
➤ Organize Company into Business Units .....	30 - 180
➤ Review New Business Projects – Weed & Focus .....	30 - 60
➤ Various HR, Legal & Accounting Reviews/Activities .....	0 - 120

**Integration Activities First 180 Days**

TRANSDIGM GROUP INC. 82



## What We Don't Look For

- Synergy
- Market share
- Fill out product line
- Excess capacity
- Access to markets
- Blah, Blah, blah

- Bigger is better
- Globalization
- Diversify
- Consolidating Industry
- Spend \$ to make \$
- Blah, Blah, blah

- Name in Paper
- Increase salary
- Get promoted
- Be fun
- Bigger Boss
- Bragging Rights

- Get fee
- Get promoted



TRANSFORM 75

## What We DO Look For

### Increase Shareholder Value





## Business Unit Structure – Driving Value Creation



TRANSDIGM 62

## Talent Development- Operational

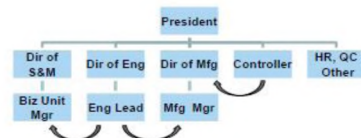
### Quarterly Business Unit Reviews & Forums



### Site Visits & Operational Reviews



### Job Rotations & Promotions



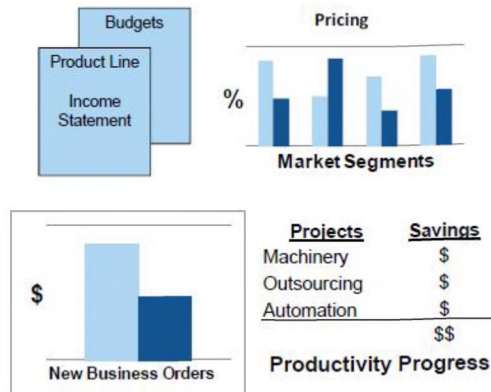
### LTM Promotions Source



TRANSDIGM 48

## Management Focus – Product Line Value Reporting Tools

### Consistent Product Line Metrics

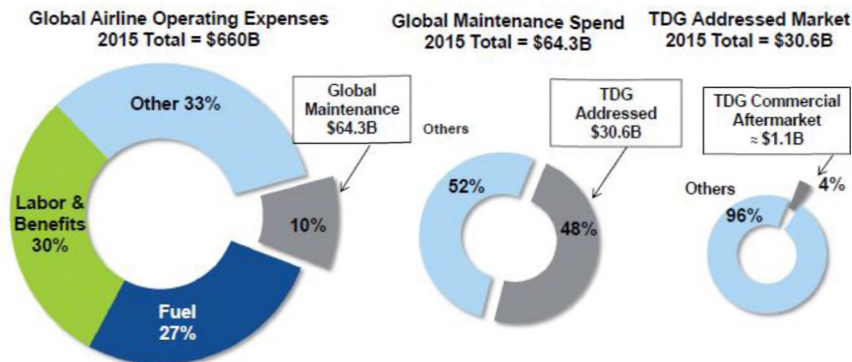


### Accountability



TRANS<sup>DIGM</sup> 39

## TransDigm's Addressed Market for Commercial Aftermarket

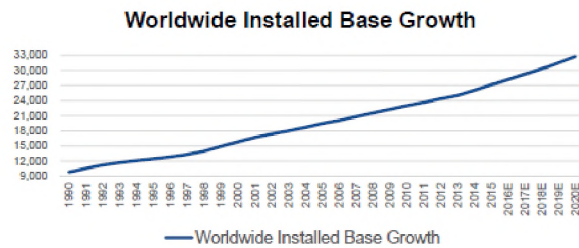


TransDigm's Addressed Market for Commercial Aftermarket is \$30.6B  
of Which We Hold a ≈ 4% Market Share

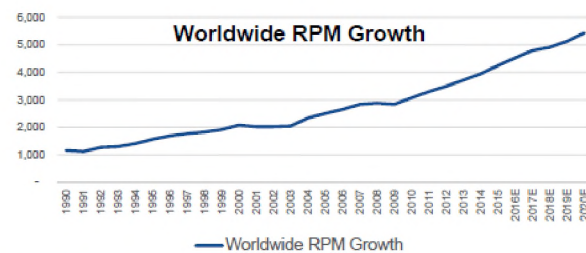
Source: IATA June 2016 / ICF SH&E Analysis / TDG  
Addressed market refers to the material market where TDG currently has content on by aircraft model and part type

TRANS<sup>DIGM</sup> 20

## Steady Growth in Passenger Traffic and Installed Base Drives Stable Aftermarket Sales



4.1% CAGR



5.3% CAGR

Source: June 2016 Airline Monitor

**TRANSNIGM** 18  
GROUP INC.

## TransDigm – Expanding Global Footprint



TRANSDIGM 12